



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

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April 5, 2013

Jeremy Bergstrom  
Berkshire Power Company, LLC  
36 Moylan Lane  
Agawam, Massachusetts 01001

**RE:** Agawam  
Transmittal No.: X254709  
Application No.: WE-13-006  
Class: OP  
FMF No.: 274425  
**AIR QUALITY PLAN APPROVAL**

Dear Mr. Bergstrom:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Waste Prevention, has reviewed your Limited Plan Application ("Application") listed above. This Application concerns the voluntary request to further restrict the existing formaldehyde emission limits for EU #1 and EU #2 contained in Conditional Approval to Construct #1-X-95-093 and to restrict the facility-wide hazardous air pollutant (HAP) emissions to less than 10 tons for any single HAP and less than 25 tons for any combination of HAPs at your facility located at 36 Moylan Lane in Agawam, Massachusetts ("Facility").

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control," regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

# **1. DESCRIPTION OF FACILITY AND APPLICATION**

Berkshire Power Company, LLC is a combustion turbine combined cycle power generation facility rated at 272 megawatt net nominal output and is currently operating in accordance with Title V Operating Permit #1-O-07-008, issued January 30, 2009. The facility has submitted a limited plan approval application to further restrict the combined formaldehyde emission rate limitation for the facility's natural gas or distillate oil-fired, 2,112 million Btu per hour, Alstom Power Model GT-24 combustion turbine and the two natural gas-fired 4-stroke lean burn, 11.34 million Btu per hour each, chiller engines. The combustion turbine and chiller engines are identified as Emission Unit (EU) #1 and EU #2, respectively, in Operating Permit #1-O-07-008. The combined air contaminant emissions from the combustion turbine and chiller engines are controlled by an oxidation catalyst and selective catalytic reduction system. In addition, the facility is requesting to restrict the facility-wide individual HAP emissions to less than 10 tons per year and the total combined HAP emissions to less than 25 tons per year. No physical or operational changes are being proposed to the facility's existing air contaminant sources or the associated air pollution control equipment.

The current formaldehyde emission limits for EU #1 and EU #2 were established as best available control technology by Conditional Approval to Construct #1-X-95-093, issued September 22, 1997. At that time, an uncontrolled formaldehyde emission rate of 2.7E-03 pounds per million Btu was the applicable emission factor contained in the United States Environmental Protection Agency (USEPA) AP-42, Fifth Edition, Volume 1, Chapter 3: Stationary Internal Combustion Sources, 3.1 Stationary Gas Turbines, Table 3.1-4 Emission Factors for Large Gas-Fired Controlled Gas Turbines (January 1995). Using this emission factor for the combustion turbine in combination with the applicable emission factor for the chiller engines resulted in an emission limit of 16.8 tons of formaldehyde in any 12 consecutive month period.

Since the issuance of Conditional Approval to Construct #1-X-95-093, the USEPA revised, in April 2000, AP-42 Chapter 3.1 Stationary Gas Turbines with two new emission factor tables which are Table 3.1-3 for Gas-Fired Stationary Gas Turbines and Table 3.1-4 for Distillate Oil-Fired Stationary Gas Turbines. According to these tables, the current emission factors for formaldehyde from the uncontrolled combustion of natural gas and distillate oil are 7.1E-04 pounds per million Btu and 2.8E-04 pounds per million Btu, respectively. These emission factors are currently in effect.

Taking into account the current USEPA AP-42 emission factors from the combustion turbines and chiller engines as well as a 50% formaldehyde destruction efficiency from the use of the oxidation catalyst, the facility has voluntarily proposed to further restrict the formaldehyde short-term and annual emission rate limits for EU #1 and EU #2 as shown in the table below. The 50% reduction is considered to be very conservative since oxidation catalyst systems on combustion turbines can provide approximately 85-90% control.

Table 1: Proposed Formaldehyde Emission Rate Limits

Emission Unit	Pollutant	Natural gas		Distillate oil		Tons per year (12 consecutive month total)
		lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	
1 and 2 (combined)	Formaldehyde	1.3	0.0006	0.9	0.0004	6.0

The proposed formaldehyde emission rate limits will apply at all load points above 50% and at all ambient temperature conditions. In addition, the proposed formaldehyde emission rate limits are more stringent than the emission rates which were established as best available control technology (BACT)

pursuant to Conditional Approval to Construct #1-X-95-093. Compliance with the pound per hour and pound per million Btu of heat input emission rates will be based on a 1-hour block average which is identical to the emission rate limit averaging time period established by Conditional Approval to Construct #1-X-95-093

Previous formaldehyde stack tests on the combustion turbine, without the chiller engines, firing natural gas and operating at 50% load indicate that the turbine will be more than capable of achieving compliance with the lower formaldehyde emission rate limits. The 50% operating load testing scenario is considered to represent the worst case for formaldehyde emissions since HAP emissions increase at reduced operating loads due to incomplete combustion.

The combustion turbine and chiller engines will be equipped with instrumentation to continuously monitor and record the heat input rate. The USEPA AP-42 emission factors, with a 50% reduction from the associated oxidation catalyst, and/or stack test emission data, as applicable, for formaldehyde will be used in conjunction with the recorded heat input rate to calculate the 1-hour block average emission rates for formaldehyde.

## 2. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1			
EU#	Description	Design Capacity	Pollution Control Device (PCD)
1	ABB Model GT24 combustion turbine , natural gas or distillate oil-fired	2,112 x 10 <sup>6</sup> Btu/hr	selective catalytic reduction catalytic oxidation
2	(2) internal combustion chiller engines, natural gas-fired	11.34 x 10 <sup>6</sup> Btu/hr each	selective catalytic reduction catalytic oxidation

**Table 1 Key:**

EU# = Emission Unit Number

PCD = Pollution Control Device

### 3. APPLICABLE REQUIREMENTS

#### A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2 below

<b>Table 2</b>				
<b>EU#</b>	<b>Operational / Production Limit</b>	<b>Air Contaminant</b>	<b>Emission Limit<sup>1,2</sup></b>	
1 and 2 (combined)	None	Formaldehyde	Natural Gas	≤0.0006 lb/MMBtu
				≤ 1.3 lb/hr
			Distillate Oil	≤0.0004 lb/MMBtu
				≤ 0.9 lb/hr
			Natural Gas or Distillate Oil	≤ 6.0 tons in any 12 consecutive month period
Facility- wide	None	Individual HAPs	< 10 tons of any individual HAP in any 12 consecutive month period	
		Total HAPs	< 25 tons of any combination of HAPs in any 12 consecutive month period	

**Table 2 Footnote:**

- 1) Compliance with the lb/hr and lb/MMBtu emission rates are based on a 1-hour block average.
- 2) The formaldehyde lb/hr and lb/MMBtu emission rate limitations apply at all load points above 50% and at all temperature conditions. All operating periods including startup, shutdown and malfunction events shall be considered when calculating annual emission rates.

**Table 2 Key:**

EU# = Emission Unit Number

HAP = Hazardous Air Pollutant

≤ = less than or equal to

< = less than

lb/hr = pounds per hour

lb/MMBtu = pounds per million British thermal units

**B. COMPLIANCE DEMONSTRATION**

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

<b>Table 3</b>	
<b>EU#</b>	<b>Monitoring and Testing Requirements</b>
1 2	1. EU #1 and EU #2 shall be equipped with instrumentation that shall continuously monitor the heat input rate from EU #1 and EU #2.
Facility-wide	2. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13
	3. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.

**Table 3 Key:**

EU# = Emission Unit Number

USEPA = The United States Environmental Protection Agency

<b>Table 4</b>	
<b>EU#</b>	<b>Recordkeeping Requirements</b>
1 2	1. The Permittee shall maintain comprehensive and accurate records of the amount of formaldehyde emitted from EU #1 and EU #2 with supporting calculations in units of lb/MMBtu (based on a 1-hour block average), lb/hour (based on a 1-hour block average) and tons in any 12 consecutive month period.
	2. The Permittee shall maintain comprehensive and accurate records of the heat input rate for EU #1 and EU #2 (on a continuous basis).
Facility-wide	3. The Permittee shall maintain adequate records onsite to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15 <sup>th</sup> day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at <a href="http://www.mass.gov/dep/air/approvals/aqforms.htm#report">http://www.mass.gov/dep/air/approvals/aqforms.htm#report</a>
	4. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	5. The Permittee shall maintain a copy of this Plan Approval and underlying Application for the EU(s) approved herein on-site.
	6. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s), PCD(s) and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.

Table 4	
EU#	Recordkeeping Requirements
Facility-wide	7. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	8. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	9. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

**Table 4 Key:**

EU# = Emission Unit Number

SOMP = Standard Operating and Maintenance Procedure

USEPA = United States Environmental Protection Agency

lb/hr = pounds per hour

lb/MMBtu = pounds per million British thermal units

Table 5	
EU#	Reporting Requirements
Facility-wide	1. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a "Responsible Official" as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	2. The Permittee shall notify the Western Regional Office of MassDEP, BWP Permit Chief by telephone [413-755-2115], email [marc.simpson@state.ma.us] or fax [413-784-1149], as soon as possible, but no later than three (3) days after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to BWP Permit Chief at MassDEP within ten (10) days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s) or continuous emission monitoring equipment failure, corrective actions taken, and action plan to prevent future exceedance(s).
	3. The Permittee shall report annually to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	4. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP's request.
	5. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	6. The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

**Table 5 Key:**

EU# = Emission Unit Number

BWP = Bureau of Waste Prevention

#### **4. SPECIAL TERMS AND CONDITIONS**

The Permittee is subject to, and shall comply with, the following special terms and conditions:

- A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

<b>Table 6</b>	
<b>EU#</b>	<b>Special Terms and Conditions</b>
Facility -wide	1. Pursuant to 310 CMR 7.00 Appendix C (8)(d)3., the Permittee may make the approved changes herein, upon receipt by the MassDEP of a BWP AQ 10 Operating Permit Minor Modification application.
	2. Any prior Plan Approvals issued under 310 CMR 7.02 shall remain in effect unless specifically changed or superseded by this Plan Approval. The Facility shall not exceed the emission limits and shall comply with approved conditions specified in the prior Plan Approval(s) unless specifically altered by this Plan Approval.

**Table 6 Key:**

EU# = Emission Unit Number

#### **5. GENERAL CONDITIONS**

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.

- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.
- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

## **6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT**

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions," which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

## **7. APPEAL PROCESS**

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211



This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Cortney Danneker by telephone at 413-755-2234, or in writing at the letterhead address.

Sincerely,

This final document copy is being provided to you electronically by the  
Department of Environmental Protection. A signed copy of this document  
is on file at the DEP office listed on the letterhead.

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Marc Simpson  
Air Quality Permit Chief  
Bureau of Waste Prevention  
Western Region

cc: WERO AQ plan file  
WERO AQ approval file

ecc: Yi Tian – MassDEP Boston  
Peter Czapienski – MassDEP WERO